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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/690,600

10/23/2003

Dar-Fu Tai

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6731

4586 7590 02/27/2007

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EXAMINER

LIN, JERRY

ART UNIT

PAPER NUMBER

1631

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/690,600	TAI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jerry Lin	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of the monomer N-benzylacrylamide for Species A (claim 5), the organic compound as a derivative of cystine for Species B (claims 3 and 4), the template molecules of a peptide for Species C (claims 6-8), and detection by quartz crystal microbalance for Species D (claims 1) in the reply filed on December 18, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

It is noted that claim 10 is drawn to a mixture and thus one monomer cannot be elected. Furthermore, instant claim 12 has the status identifier of "withdrawn." However, the restriction requirement did not state that claim 12 was drawn to a separate species or invention and the Examiner did not require that claim 12 be withdrawn. Thus, instant claim 12 is still pending and under examination. The status identifier of "withdrawn" is incorrect.

### ***Status of the Claims***

Claims 1-12 are under examination.

The Applicant has elected the monomer N-benzylacrylamide in claim 5, the organic compound as a derivative of cystine in claims 3 and 4, the template molecules of a peptide in claims 6-8, and detection by quartz crystal microbalance in claim 1.

***Claim Objections***

2. Claims 4, 5, 9, 11 and 12 are objected to because of the following informalities: the third line of the instant claim contains multiple periods. Periods indicate the end of a claim and are not to be use within each claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 112, 2<sup>nd</sup> Paragraph***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: discriminating a peptide. The instant claims are drawn to a method for discriminating a peptide. The method steps include the process of making a chip, however, does not include any steps regarding the application of the peptide or how the peptide is discriminated. Furthermore, claims 6-8 state that the template molecule is a peptide. Thus, it is unclear if the template molecule is being detected or some other peptide. For purposes of this office action, it is some other peptide that is being detected.

5. Instant claim 1 also recites the limitation of "associating monomers." It is unclear what is meant by this term. One interpretation is that the monomers are contacted with

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the chip. Another interpretation is that the chip is assigned with a monomer. For purposes of this office action, the former interpretation is used. Instant claim 6 also recites "associated" which is unclear for the same reasons above.

6. Instant claim 1 recites "(a) providing an organic compound which serves as . . . . a monomer" and "(c) associating monomers . . . . " It is unclear if the monomer is the same as the organic compound or if it is another compound.

7. Instant claim 12 is also unclear because it states that it forms a molecularly imprinted membrane, but there is nothing to imprint.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao et al. (Analyst (2001) Volume 126, pages 184-188) in view of Horáček et al. (Analytica Chimica Acta (1997) volume 347, pages 43-50).

The instant claims are drawn to a method of discriminating a peptide that include the steps of providing an organic compound, absorbing the organic compound on a chip to form a single layer, associating monomers with double bonds and template molecules to the chip to form a molecularly imprinted membrane by polymerization and detecting by a quartz crystal microbalance (QCM) equipped with a flow injection system.

Cao et al. teach a method that includes absorbing an organic compound on a chip to form a single layer (page 185); associating monomers with double bonds and template molecules (page 185) to form a molecularly imprinted membrane by polymerization (page 185, right column), and detecting by a quartz crystal microbalance (abstract) and where the organic compound is a peptide (page 185).

However, Cao et al. does not teach using a flow injection system or cystine.

Horáček et al. teaches using a flow injection system (page 46, left column) and derivatives of cystine as a monomer for molecularly imprinted membranes (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the methods of Cao et al. and Horáček et al. Both use molecular imprinted membranes on QCM detectors. Horáček et al. method's is drawn to providing a label free method that allows the study of affinity binding in real-time. To accomplish studying the affinity binding in real time, Horáček et al. requires a flow injection system (page 46). To provide for a label free method, Horáček et al. provides a method of

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binding monoclonal antibodies to a gold substrate that requires derivatives of cystine. Thus one of ordinary skill in the art would be motivated to combine the methods of Cao et al. and Horáček et al. to gain the advantage of real time analysis and the ability to bind monoclonal antibodies to a gold substrate.

10. Claims 1 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao et al. (Analyst (2001) Volume 126, pages 184-188) in view of Horáček et al. (Analytica Chimica Acta (1997) volume 347, pages 43-50) further in view of Domb (US 5,630,978).

The instant claims are drawn to a method of discriminating a peptide that include the steps of providing an organic compound, absorbing the organic compound on a chip to form a single layer, associating monomers with double bonds and template molecules to the chip to form a molecularly imprinted membrane by polymerization and detecting by a quartz crystal microbalance (QCM) equipped with a flow injection system, wherein the template molecule is oxytocin or vasopressin.

Cao et al. and Horáček et al. are applied as above.

However, Cao et al. and Horáček et al. do not teach using oxytocin or vasopressin.

Domb teaches using oxytocin or vasopressin as the template molecule for molecular imprinting (column 10, lines 46-57; and claims 6, 11 and 25).

It would have been obvious to one of ordinary skill in the art to combine the methods of Cao et al. and Horáček et al. with Domb to gain the benefit of being able to

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imprint hormones. Cao et al. and Horáček et al. teach that their methods are directed toward being able to distinguish different molecules. However, in order to be able to distinguish different molecules, the proper molecular template must be used. Domb teaches that hormones may be used a molecular template (column 10, lines 46-57; and claims 6, 11 and 25). Domb's templates would allow one of ordinary skill in the art to detect hormones. Thus one of ordinary skill in the art seeking to detect hormones would be motivated to combine the methods of Cao et al. and Horáček et al. with Domb.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Lin whose telephone number is (571) 272-2561. The examiner can normally be reached on 10:00-6:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Irem Yucel can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JL

MICHAEL BORIN, PH.D  
PRIMARY EXAMINER

